

Patent Claims

1. Redundant serial bus having  $n > 1$  parallel bus lines for redundant networking of bus subscribers each having a single bus communications interface,  
characterized  
- in that a redundancy means (3), which can be connected upstream, having  $n$  interfaces for connection to  $n$  parallel bus lines (11, 12) and one interface for connection to the single bus communications interface (200) of at least one bus subscriber (2) are provided,  
- in that the redundancy means (3) which can be connected upstream has, at the receiving end, an input stage (311) at least for each bus line (11, 12), and has an evaluation stage (312) and an output stage (313) for all the bus lines (11, 12),  
- in that the evaluation stage (312) has means for evaluating the validity of a data stream and for selection of one of the bus lines (11, 12) as the receiving line, and  
- in that the redundancy means (3) which can be connected upstream has, at the transmitting end, a driver (321) for each bus line (11, 12).
2. Redundant serial bus according to Claim 1,  
characterized  
in that the input stage (311) has means for synchronization and filtering.
3. Redundant serial bus according to one of Claims 1 and 2,  
characterized  
In that the input stage (311) has means for serial/parallel conversion.
4. Redundant serial bus according to Claim 3,  
characterized  
in that the output stage (313) has means for parallel/serial conversion.
5. Redundant serial bus according to Claim 1,  
characterized  
in that the evaluation stage (312) has means for evaluation of the data stream, for time evaluation, for assessment of the state of the receiving lines and for line selection.
6. Redundant serial bus according to one of Claims 1 to 5,

- characterized  
in that the redundancy means (3) which can be connected upstream can be permanently set to one bus line (11, 12) on the receiving side.
- 5 7. Redundant serial bus according to one of Claims 1 to 5,  
characterized  
in that the redundancy means (3) which can be connected upstream can be permanently set to one bus line (11, 12) on the transmitting side.
- 10 8. Redundant serial bus according to Claim 7,  
characterized  
in that each driver (321) comprises a gate circuit for muting the driver output.
- 15 9. Redundant serial bus according to one of Claims 1 to 8,  
characterized
- in that at least one selected bus subscriber (2) is equipped with a diagnosis interface (201) for connection of control lines (5),
  - in that the evaluation stage (312) of the redundancy means (3) which can be connected upstream is equipped with connections for connection of control lines (5), and
  - in that the gate circuits of the drivers (321) have control inputs which are connected by means of control lines (5) to the diagnosis interface (201).
- 20 10. Method for operating a redundant serial bus according to Claim 1,  
characterized
- in that, during operation, identical message packets are sent in parallel and at the same time to all the bus lines (11, 12),
  - in that the identical message packets on all the bus lines (11, 12) are received in parallel by the redundancy means (3) which can be connected upstream,
  - in that the data streams of the received message packets are checked for their validity, and
  - in that, depending on the validity of the data streams, one of the bus lines (11, 12) is selected, whose data stream is passed on to the connected bus subscriber (2).
- 25 30 35 11. Method according to Claim 10,

characterized

in that data packets are sent and received on one and the same bus line  
(11, 12) in order to diagnose the redundant serial bus (1) with the same  
selected bus subscriber (2).

*Abstr*

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